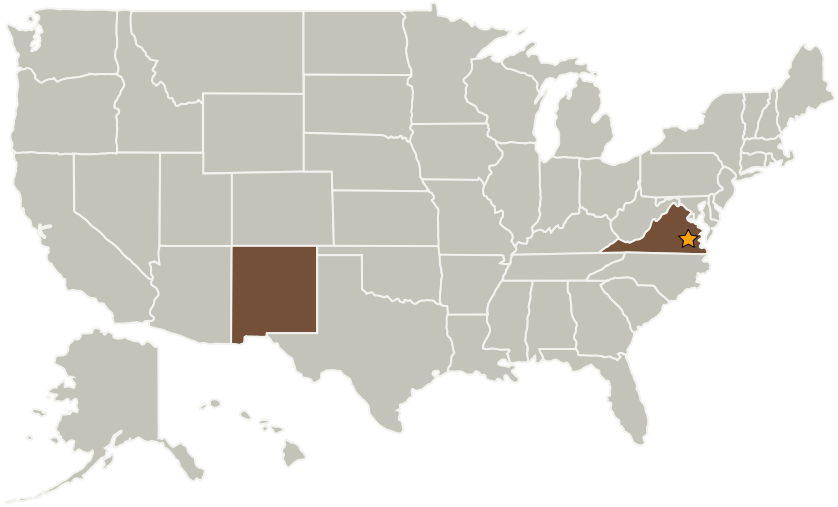
Power for Vehicle Embedded MEMS Sensors, Phase II

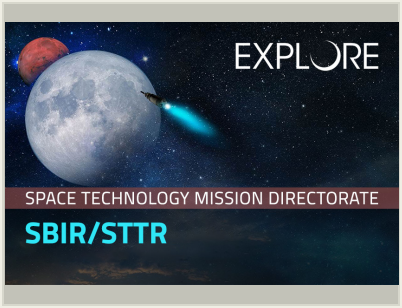
Completed Technology Project (2005 - 2007)

Project Introduction

Embedded wireless sensors of the future will enable flight vehicle systems to be "highly aware" of onboard health and performance parameters, as well as the external flow field and potential threat environments. Because there will be no opportunity to replace batteries on a regular basis, these systems will have to rely on energy harvesting strategies to convert ambient energy into electrical energy to provide long-lived power. TPL proposes to develop a micropower system that will combine TPL's patented microbatteries and microsupercapacitors with vibrational energy harvesting for use with wireless structural health monitoring (SHM) systems. The solution proposed will include all components required for a complete power supply for wireless SHM sensors, including proprietary power regulation and conditioning circuitry that draws very low power. TPL is a leader in designing and manufacturing power for light weight, minimum volume, minimum footprint, wireless systems. TPL's effort has been supported by Goodrich Fuel and Utility Systems whose expertise with Structural Health Monitoring will provide guidance on sensor requirements, integration and packaging. These relationships will facilitate realizing devices that will meet end-user requirements, and provide a commercialization pathway for Phase III.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
TPL, Inc.	Supporting Organization	Industry	Albuquerque, New Mexico

Primary U.S. Work Locations	
New Mexico	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.2 Mobility
    - TX04.2.2 Above-Surface Mobility